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**Los Alamos National Laboratory**  
**Solid Earth Geophysics**  
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## Education

- 2003-2009 Ph.D. in Geophysics, *The Global Systematics of Subduction Zones*  
Boston University, Boston, MA
- 1999-2003 Sc.B. in Physics, with Honors,  
A.B. in Geology-Physics/Mathematics  
Brown University, Providence, RI

## Appointments

- 2013-present *Director's Postdoctoral Fellow*, Los Alamos National Laboratory  
Los Alamos, NM; supervisors: Monica Maceira and Paul Johnson
- 2011-2013 *Assistant Scientist*, Department of Geoscience,  
University of Wisconsin-Madison, Madison, WI; supervisor: Clifford Thurber
- 2008-2011 *Postdoctoral Fellow*, Seismology, University of Wisconsin-Madison  
Madison, WI; supervisor: Clifford Thurber
- 2003-2008 *Graduate Research Assistant*, Department of Earth Sciences,  
Boston University, Boston, MA; supervisor: Geoffrey Abers
- 2006-2007 *Teaching Fellow*, Department of Earth Sciences,  
Earthquakes, Volcanoes and other Natural Disasters; Structural Geology  
Boston University, Boston, MA; supervisors: Paul Hall and Ulrich Faul
- 2002-2003 *Undergraduate Research Assistant*, Department of Geological Sciences  
Brown University, Providence, RI; supervisor: Karen Fischer
- 2000-2002 *Teaching Assistant*, Physics Department, Introduction to Astronomy  
Brown University, Providence, RI; supervisor: Gregory Tucker

## Peer-reviewed Publications

**Syracuse, E. M.**, C. H. Thurber, C. J. Rawles, M. K. Savage, S. Bannister (2013), High-resolution relocation of aftershocks of the M<sub>w</sub>7.1 Darfield, New Zealand, earthquake and implications for fault activity, *J. Geophys. Res.*, 118(8), 4184-4195, doi:10.1002/jgrb.50301.

Holt, R. A., M. K. Savage, J. Townend, **E. M. Syracuse**, C. H. Thurber (in press), Crustal stress and fault strength in the Canterbury Plains, New Zealand, *Earth Planet. Sci. Lett.*

Segall, P., A. L. Llenos, S.-H. Yun, A. M. Bradley, **E. M. Syracuse** (accepted to *J. Geophys. Res.*), Time-dependent dike propagation from joint inversion of seismicity and deformation data.

**Syracuse, E. M.**, R. A. Holt, M. K. Savage, J. H. Johnson, C. H. Thurber, K. Unglert, K. N. Allan, S. Karaliyadda, M. Henderson (2012), Temporal and spatial evolution of hypocentres and anisotropy from the Darfield aftershock sequence: Implications for fault geometry and age, *New Zeal. J. Geol. Geophys.*, 55(3), 287-293, doi:10.1080/00288306.2012.690766.

Cooper, L. B., D. M. Ruscitto, T. Plank, P. J. Wallace, **E. M. Syracuse**, C. E. Manning (2012), Global variations in H<sub>2</sub>O/Ce: 1. Slab surface temperatures beneath volcanic arcs, *Geochem. Geophys. Geosyst.*, 13, Q03024, doi:10.1029/2011GC003902.

**Syracuse, E. M.**, C. H. Thurber, J. A. Power (2011), The Augustine magmatic system as revealed by seismic tomography and relocated earthquake hypocenters from 1994 through 2009, *J. Geophys. Res.*, 116, B09306, doi:10.1029/2010JB008129.

P. E. van Keken, B. R. Hacker, **E. M. Syracuse**, G. A. Abers (2011), Subduction factory: 4. Depth-dependent flux of H<sub>2</sub>O from subducting slabs worldwide, *J. Geophys. Res.*, 116, B01401, doi:10.1029/2010JB007922.

**Syracuse, E. M.**, C. H. Thurber, C. J. Wolfe, P. G. Okubo, J. H. Foster, B. A. Brooks (2010), High-Resolution locations of triggered earthquakes and tomographic imaging of Kilauea Volcano's south flank, *J. Geophys. Res.*, 115, B10310, doi:10.1029/2010JB007554.

**Syracuse, E. M.**, P. E. van Keken, G. A. Abers (2010), The global range of subduction zone thermal models, *Phys. Earth. Planet. In.*, 183(1-2), 73-90, doi:10.1016/j.pepi.2010.02.004.

Poland, M. P., A. Miklius, D. Wilson, P. Okubo, E. Montgomery-Brown, P. Segall, B. Brooks, J. Foster, C. Wolfe, **E. Syracuse**, C. Thurber (2010), Slow Slip Event at Kilauea Volcano, *Eos Trans. AGU*, 91, 13, 118-119, doi:10.1029/2010EO130002.

**Syracuse, E. M.**, G. A. Abers (2009), Systematic biases in subduction zone hypocenters, *Geophys. Res. Lett.*, 36, L10303, doi:10.1029/2009GL037487.

J. A. Walker, A. P. Teipel, J. G. Ryan, **E. Syracuse** (2009), Light elements and Li isotopes across the northern portion of the Central American subduction zone, *Geochem. Geophys. Geosyst.*, 10, Q06S16, doi:10.1029/2009GC002414.

S. W. French, K. M. Fischer, **E. M. Syracuse**, M. E. Wysession (2009), Crustal structure beneath the Florida-to-Edmonton broadband seismometer array, *Geophys. Res. Lett.*, 36, L08309, doi:10.1029/2008GL036331.

**Syracuse, E. M.**, G. A. Abers, K. Fischer, L. MacKenzie, C. Rychert, M. Protti, V. Gonzales, W. Strauch (2008), Seismic tomography and earthquake locations in the Nicaraguan and Costa Rican upper mantle, *Geochem. Geophys. Geosyst.*, 9, Q07S08, doi:10.1029/2007GC001887.

L. MacKenzie, G. A. Abers, K. M. Fischer, **E. M. Syracuse**, J. M. Protti, V. Gonzalez, W. Strauch (2008), Crustal structure along the southern Central American volcanic front, *Geochem. Geophys. Geosyst.*, 9, Q08S09, doi:10.1029/2008GC001991.

C. A. Rychert, K. M. Fischer, G. A. Abers, T. Plank, **E. Syracuse**, J. M. Protti, V. Gonzalez, W. Strauch (2008), Strong along-arc variations in attenuation in the mantle wedge beneath Costa Rica and Nicaragua *Geochem. Geophys. Geosyst.*, 9, Q10S10, doi:10.1029/2008GC002040.

**Syracuse, E. M.**, G. A. Abers (2006), Global compilation of variations in slab depth beneath arc volcanoes and implications, *Geochem. Geophys. Geosyst.*, 7, Q05017, doi:10.1029/2005GC001045.

## Selected Abstracts

**Syracuse, E. M.**, J. D. Pesicek, H. Zhang, C. H. Thurber (2013), Exploring the connection between intermediate-depth seismicity, slab hydration, and dehydration, 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

**Syracuse, E. M.**, C. H. Thurber, M. K. Savage (2012), Seismic tomography of the Canterbury Plains and the geometry and evolution of seismicity of the Greendale fault system, New Zealand, 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

Armstrong, R. S., **E. M. Syracuse**, C. H. Thurber, M. L. Anderson (2012), Repeating earthquakes in the Darfield region, New Zealand, 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

**Syracuse, E. M.**, P. G. Okubo, C. H. Thurber (2012), High-resolution seismic imaging of Kilauea volcano's summit region: Combined datasets, comparison of tomographic methods, and updated seismic velocities, AGU Chapman Conference on Hawaiian Volcanoes: From Source to Surface, Waikoloa, Hawaii, 20-24 Aug.

**Syracuse, E. M.**, C. H. Thurber (2011), Seismic evidence for hydration of the Central American slab: Guatemala through Costa Rica, Abstract V41D-2542, 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

Holt, R. A., J. H. Johnson, **E. M. Syracuse**, M. K. Savage, C. H. Thurber, M. Henderson, K. Allan, K. Uglert (2011), Shear wave splitting and evolution of seismicity on the Canterbury plains: The nature of the Darfield fault, S31C-2254, 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

**Syracuse, E. M.**, C. H. Thurber, J. A. Power (2011), The Augustine magmatic system as revealed by seismic tomography and relocated earthquake hypocenters from 1994 through 2009, GeoPRISMS – EarthScope Planning Workshop for the Alaska Primary Site, Portland, Oregon, 22-24 Sept.

**Syracuse, E. M.**, C. H. Thurber, J. A. Power, S. G. Prejean (2010), Three-dimensional velocity structure and high-precision earthquake relocations at Augustine, Akutan, and Makushin Volcanoes, Alaska, Abstract S31C-02, 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. (Talk)

**Syracuse, E. M.**, C. H. Thurber, C. J. Wolfe, P. Okubo, B. A. Brooks, P. Segall, J. H. Foster (2009), High-Resolution Locations of Triggered Earthquakes and Tomographic Imaging of Kilauea's South Flank, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract S53B-08. (Talk)

Fischer, K. M., C. A. Rychert, **E. M. Syracuse**, G. A. Abers, T. Plank (2009), Along-Arc Variations in Volatile Cycling in the Nicaragua-Costa Rica Subduction Zone, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract U52A-02.

**Syracuse, E. M.**, C. H. Thurber (2009), High-resolution earthquake location and preliminary tomographic imaging of Aleutian volcanoes: Akutan and Makushin, EarthScope National Meeting, Boise, Idaho, 12-15 May.

**Syracuse, E. M.**, G. A. Abers, P. E. van Keken (2008), The Global Range of Subduction Zone Thermal Models, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract U53A-0065.

**Syracuse, E. M.**, G. A. Abers, K. M. Fischer, P. E. van Keken, E. A. Kneller, C. A. Rychert (2007), Improving Seismic Constraints on Subduction Zone Geometry, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract T43C-06. (Talk)

van Keken, P. E., E. A. Kneller, **E. Syracuse**, M. Long, D. Abt, G. Abers, K. Fischer (2007), Trench-parallel flow in the mantle wedge: insights from integrating seismology and 3D subduction zone modeling, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract T53D-04.

Plank, T., C. Rychert, K. Fischer, G. Abers, **E. Syracuse** (2007), Temperature of mantle melts beneath Central America: Integrating petrologic and seismic observations, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract T44C-07.

**Syracuse, E. M.**, G. A. Abers, L. Auger, K. Fischer, M. Protti, V. Gonzales, W. Strauch (2007), Seismic velocities and earthquake locations in the Central America upper mantle: Results from the TUCAN experiment, MARGINS Workshop to Integrate Subduction Factory and Seismogenic Zone Studies in Central America, Heredia, Costa Rica, 18-22 Jun.

**Syracuse, E. M.**, G. A. Abers, L. Auger, K. Fischer, M. Protti, V. Gonzalez, W. Strauch, J. Brewer (2006), Seismic Velocities and Earthquake Locations in the Central America Upper Mantle: results from the TUCAN Experiment, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract T21G-04. (Talk)

**Syracuse, E. M.**, G. A. Abers, L. Auger, K. Fischer, D. Abt, C. Rychert, M. Salas, M. Protti, V. Gonzalez, W. Strauch (2006), Preliminary Earthquake Locations and Tomographic Results from the TUCAN array, MARGINS Workshop: Interpreting Upper Mantle Images, Woods Hole, Mass., 17-19 May.

**Syracuse, E. M.**, G. A. Abers (2004), Global and Local Variations in Slab Depth Beneath arc Volcanoes, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract T21B-0522.

Fischer, K. M., **E. Syracuse**, S. Rondenay, M. E. Wysession, M. Salas, L. Doermann, M. Welsh (2003), Crustal Structure and Mantle Anisotropy from Florida to Edmonton, *Eos Trans. AGU*, 84(46), Fall Meet. Suppl., Abstract S31H-08.

## Invited Presentations

13<sup>th</sup> International Workshop on Modelling of Mantle and Lithosphere Dynamics, 9/13  
*Seismic observations of subducting slabs and implications for modeling, hydration, and volcanism*

Massachusetts Institute of Technology, 4/12  
*Linking the arc to the subducting slab: A global perspective of hydration and temperature*

Victoria University-Wellington, New Zealand, 1/11  
*High-Resolution locations of triggered earthquakes and tomographic imaging of Kilauea Volcano's south flank*

Lamont-Doherty Earth Observatory, 3/08  
*Seismic Tomography and Earthquake Locations in the Nicaraguan and Costa Rican Upper Mantle*

University of Michigan, 2/08  
*Seismic Tomography and Earthquake Locations in the Nicaraguan and Costa Rican Upper Mantle*

Brown University, Geophysics Lunch Bunch, 4/07  
*Velocities and Earthquake Locations in Central America: results from the TUCAN Experiment*

## Synergistic Activities

2013	Convener of AGU Fall Meeting Session <i>DI05: Geophysical Observations and Models of Subduction</i>
2010-2013	Language Editor, American Journal Experts
2010-present	Judge for AGU Fall Meeting Outstanding Student Paper Award
2008-present	Reviewer – NSF (Geophysics, GeoPRISMS, EarthScope, PASI), <i>Bull. Seismol. Soc. Am., Earth Planet. Sci. Lett., Geology, Geophys. J. Int., Geophys. Res. Lett., J. Geophys. Res., Nat. Geosci.</i>
2010	Convener of AGU Fall Meeting Session <i>DI09: Observations and Dynamics of Subducted Slabs</i>
2006-2008	Graduate Student Organization, Department Representative, Boston University
2001-2003	Ladd Observatory, Assistant on public observing nights, Providence, RI
2001-2003	Women in Science and Engineering, Physics and Space Studies Affinity Group leader, Brown University

## Field Experience

2010-2011	Canterbury, New Zealand: Darfield aftershock RAPID PASSCAL deployment
2004	Costa Rica, Nicaragua: TUCAN broadband PASSCAL deployment

## Support

“Assessing the causes of slab seismicity through dehydration, temperature and strain: A global approach,” E. M. Syracuse (PI) and C. H. Thurber (co-PI), \$106,637, 1/1/13-12/31/13

“Observations of a newly discovered fault: Tomography, locations and source mechanisms for aftershocks of the M7.1 Darfield, New Zealand earthquake,” E. M. Syracuse (PI) and C. H. Thurber (co-PI), \$129,865, 1/1/12-12/31/13

“Seismic Evidence for Hydration of the Central American Slab: Guatemala Through Costa Rica,” E. M. Syracuse (PI) and C. H. Thurber (co-PI), \$108,261, 6/1/11-12/31/12

## Supervised Undergraduates

2012	Ryan Armstrong (IRIS undergraduate intern), Colorado College – search for and location of repeating aftershocks of the 2010 Darfield, New Zealand, earthquake Armstrong, R. S., E. M. Syracuse, C. H. Thurber, M. L. Anderson (2012), Repeating earthquakes in the Darfield region, New Zealand, 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
2011	Dana Peterson, University of Wisconsin-Madison – earthquake relocations at Kilauea Volcano
2010	Matthew Wessale, University of Wisconsin-Madison – earthquake relocations at Redoubt Volcano Wessale, M. S., J. D. Pesicek, E. M. Syracuse, C. H. Thurber, H. R. DeShon, J. A. Power, S. G. Prejean (2010), Comparison of Seismicity Preceding the 1989-1990 and 2009 Eruptions of Redoubt Volcano, Alaska, Abstract S21B-2037, 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
2009	Laura Sumiejski, University of Wisconsin-Madison – earthquake relocations and tomography at Kilauea Volcano
2006	Karen Godfrey, Boston University – P-arrival picking of shots from the TICOCAVA experiment recorded by the TUCAN array
2006	Jonathan Brewer, Boston University – P- and S-arrival picking from the TUCAN array
2005	Gustavo Reyes, Boston University – P- and S-arrival picking and earthquake relocation for the Oct. 2004 $M_w 7.1$ Nicaragua earthquake

## Scientific Collaborators (within past four years)

Geoffrey Abers (LDEO), Benjamin Brooks (U. of Hawaii), Harmony Colella (Miami U.), Lauren Cooper (ETH Zurich), Karen Fischer (Brown U.), James Foster (U. of Hawaii), Bradley Hacker (UCSB), Mark Henderson (GNS Science), Robert Holt (Victoria U. Wellington), Monica Maceira (LANL) Paul Okubo (USGS, HVO), Terry Plank (LDEO), Michael Poland (USGS, HVO), John Power (USGS, AVO), Stephanie Prejean (USGS, AVO), Martha Savage (Victoria U. Wellington), Paul Segall (Stanford), Clifford Thurber (UW-Madison), Peter van Keken (U. Michigan), Cecily Wolfe (U. of Hawaii), Haijiang Zhang (USTC).

## Graduate and Postdoctoral Advisors

Geoffrey A. Abers, Ph.D. advisor, now at Lamont-Doherty Earth Observatory  
Clifford H. Thurber, Postdoctoral advisor, University of Wisconsin-Madison  
Monica Maceira, Postdoctoral advisor, Los Alamos National Laboratory  
Paul Johnson, Postdoctoral advisor, Los Alamos National Laboratory